AVIDYNE

IFD5XX & IFD4XX Series NAV/COM/GPS Navigator

Exchange Guide

Revision History

Document Number	600-00316-000	*Control Category*	CC1
Revision	*Description*	*ECO*	*Date*
00	Initial Release	ECO-16-128	04/21/16
01	Redlines after FAA ACO Review	ECO-16-236	07/22/16
02	Update for Release 10.2	ECO-17-024	03/06/17

Table of Contents

1. Introduction

This guide is intended to instruct aircraft owners how to replace a Garmin GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) with an Avidyne IFD4XX/IFD5XX Nav/Com/GPS Navigator as a preventive maintenance activity as described in CFAR14 Part 43.3 and Part 43 Appendix A.

1.1 *Are You and Your Aircraft Eligible For This Exchange?*

If you can answer "Yes" to each of the questions below, then you are permitted to perform this exchange on your own in accordance with CFAR 14 Part 43.3 and Part 43 Appendix A.

If you answer "No" or "I don't know" to any of these questions/tests then it is unlikely you are permitted to perform this exchange on your own and you should consult an approved installation shop. Avidyne Customer Support can supply the list of approved installation shops, if needed.

1	Are you a holder of a United States pilot certificate?	Yes	No
2	Do you own or operate the aircraft (fixed wing or rotary wing) in question and is it registered in the US (N-reg)?	Yes	No
3	Can you confirm the aircraft in question is **NOT** operated under CFAR 14 Part 121 (Air Carrier), 129 (Foreign Air Carrier) or 135 (Commuter or On-Demand Operations)?	Yes	No
4	The Garmin unit that you want to replace with an Avidyne IFD4XX or IFD5XX unit satisfies one of the acceptable combinations in the table immediately below these questions?	Yes	No
5	Can you confirm the Garmin unit being replaced does **NOT** currently have a TAWS (fixed wing) or HTAWS (rotary wing) capability? Note: this can be determined by turning on the Garmin and noting if the TAWS system in displayed on the start up screens.	Yes	No
6	**If you are replacing a WAAS-capable Garmin unit (e.g. GPS 400W, GNS 430W, GPS 500W, GNS 530W) then you can skip this question.** Can you confirm that the aircraft is question does **NOT** have a Garmin GA56 GPS antenna (Part # 010-10040-01 or 011-00134-00) connected to the unit to be replaced? Note: GA56**W** and GA56**A** antennas are perfectly acceptable.	Yes	No
7	**If your Garmin unit is powered by 28VDC, then you can skip this question.** **If you are replacing a GPS400(W) with an IFD410 or replacing a GPS500(W) with an IFD510 then you can skip this question.** Can you confirm that electrical bus that the IFD will be connected to is either a 28V ± 3V system **OR** that if it is connected to a 14V ± 3V system, then the circuit breakers guarding the IFD unit are at least 7.5 A?	Yes	No
8	Can you confirm that to the best of your knowledge, there are no known installation problems (e.g. bent pins, inability to seat in the tray, etc)	Yes	No

	with the Garmin unit you intend to replace and that it works well enough to record the configuration settings in it?		
9	Do you have a 3/32" hex wrench available? Note: There should have been a proper hex wrench included with the IFD unit.	Yes	No
10	Do you have the aircraft log books available?	Yes	No

1.2 *Acceptable Replacement Combinations*

The following table describes the acceptable exchange combinations:

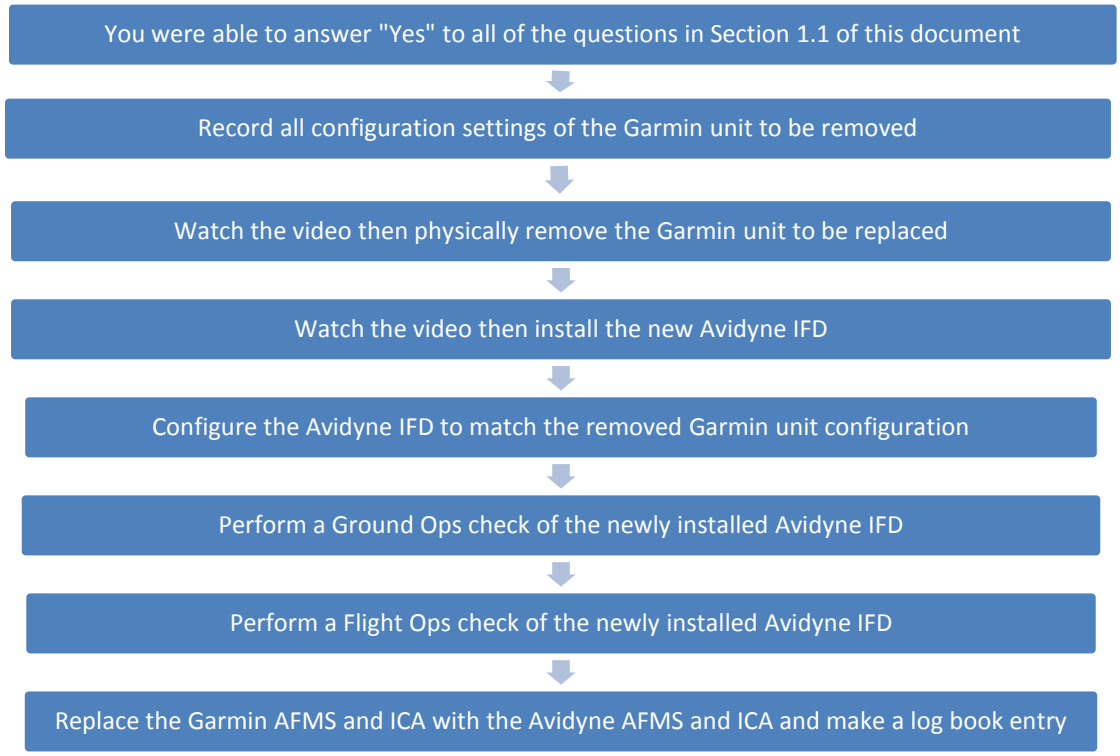
Device to be Removed	Acceptable Exchange Device
GPS 400, GPS 400W (any variant)	IFD410
GNS 430, GNS 430W (any variant, but 14V units need proper circuit breaker sizing (7.5A) in order to proceed)	IFD440
GPS 500, GPS 500W (any variant)	IFD510
GNS 530, GNS 530W (any variant except TAWS, but 14V units need proper circuit breaker sizing (7.5A) in order to proceed)	IFD540

1.3 *Recommended Setup*

Avidyne strongly recommends the following equipment is on-hand and/or preparation steps taken prior to starting the exchange process:

- Only attempt this process during normal Avidyne Tech Support business hours (Monday through Friday, from 8:00AM to 5:00PM EDT/ 1200-2100UTC). We don't expect any problems when attempting this procedure but if issues or questions arise, we want to ensure you have immediate support and calling within those hours should ensure that;
- Have a laptop/mobile device positioned in the seat next to you that can play the instructional video on;
- Have a mobile phone ready with Avidyne Tech Support number handy (1-888-723-7592);
- Plug the aircraft into an external power connection, if available;
- Review a section of the instructional video, then perform that section and repeat that cycle until complete. The video can be accessed using this link: https://www.youtube.com/watch?v=k10VHzM7CxI;
- If at any point you run into an issue, call Avidyne Tech Support immediately.

1.4 *Exchange Process Flow Chart*



For planning purposes, a smooth exchange should take approximately 60 minutes from start to finish, not including the recommended flight ops check.

No part of this exchange process will be paid by Avidyne Corporation however if a problem is encountered during the process, don't hesitate to contact Avidyne Technical Support. The U.S. Toll Free number is 1-888-723-7592. International toll free numbers are listed at http://www.avidyne.com/contact/intphones.asp

Customer/product support issues can be emailed as well at: techsupport@avidyne.com

1.5 *Other Requirements or Limitations*

In replacing a Garmin GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) unit with the IFD4XX/IFD5XX, the currently approved interfaces and capabilities of the GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) must be duplicated in the IFD4XX/IFD5XX replacement. Appendix B contains the list of approved interfaces.

To be configured in the IFD4XX/IFD5XX, capabilities and equipment interfaces must have been approved in the original Garmin GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) installation. If equipment was added and interfaced to the original Garmin equipment that was not approved as part of the original installation or an approved add-on then this exchange process should not be attempted since there may be no installation basis for that extra equipment.

By following the instructions in this document and duplicating the originally GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) setup configurations, the replacement IFD4XX/IFD5XX will interface to the same equipment and provide the same features.

The IFD4XX/5XX has a number of optional capabilities, just like the GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) to include:

- Com Frequency Active-Standby Swap
- Nav Frequency Active-Standby Swap
- Com presets
- Aural alerting

If those optional capabilities were not operational in the aircraft with the GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W), then this exchange process does NOT permit adding them now.

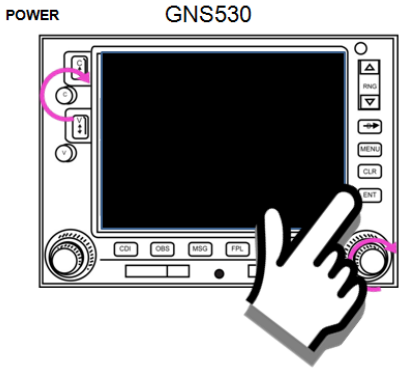
2. Exchange Procedure

2.1 *Record GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) Configurations*

All configurations of the existing equipment must be captured prior to removal of the Garmin GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) to correctly configure the IFD4XX/IFD5XX.

1. Put the Garmin unit into Maintenance Mode via the following steps:

   i) While the Garmin unit is OFF, press & hold the ENT key and turn the unit ON.
   ii) Release after screen lights up.
   iii) Config Pages can be selected by rotating the small (inner ring) right knob.



GNS5XX Series

2 Record parameters from the corresponding fields recorded in the Garmin GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) in writing in the tables below – this document becomes the permanent record of the settings. Avidyne recommends taking digital photos of each page and saving them as a backup technique.

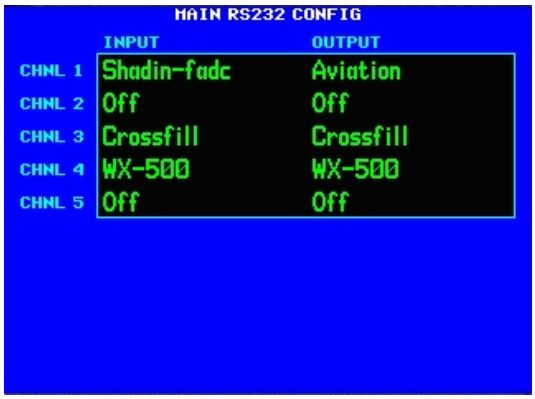
> **Not every configuration page is necessary to record. If the configuration page is not one that exists or needs to be replicated on the Avidyne IFD, it is not included here.**

GNS530(W)/GNS430(W) - MAIN ARINC 429 CONFIG page

	Speed	***Data***
IN 1		
IN 2		
OUT		
SDI		
VNAV		

GNS530(W)/GNS430(W) – MAIN RS232 CONFIG Page

	Input	***Output***
CHNL 1		
CHNL 2		
CHNL 3		
CHNL 4		
CHNL 5		



GNS530(W)/GNS430(W) MAIN SYSTEM CONFIG Page (Fuel)

CONFIGURE	*Fuel*
FUEL TYPE	

GNS530(W)/GNS430(W) – MAIN SYSTEM CONFIG Page (Terrain) [if present]

CONFIGURE	*Terrain*
TERRAIN TYPE	*Terrain**
TEST CARD?	
HW CONFIG	
012-00296-	
012-00401-	

*TAWS GNS530/W not approved (see question 5 "Are You and Your Aircraft Eligible For This Exchange?" pg. 4)

GNS530(W)/GNS430(W) – MAIN SYSTEM CONFIG Page (Discretes) [if present]

CONFIGURE	*Discretes*
GPS SELECT	
COM PRESETS	

GNS530(W)/GNS430(W) – MAIN SYSTEM CONFIG Page (Airframe) [if present]

CONFIGURE	*Airframe*
AIRFRAME	
AIR/GROUND (if present)	

GNS530(W)/GNS430(W) – MAIN INPUTS Page [most entries may be blank – that is okay]

OAT		***HDG***		***B ALT***	
SAT		***W DIR***		***D ALT***	
TAT		***GPS SC***		***P ALT***	
IAS		***VLC SC***		***L FF***	
TAS		***CDI***		***R FF***	
W SPD				***T FF***	
				T FOB	
JOYSTICK WPT					

GNS530(W)/GNS430(W) – INSTRUMENT PANEL SELF TEST (For reference only – there is not an equivalent page in the IFD)

CDI		***FUEL CAPACITY***
FLG		
VCDI		***FUEL ON-BOARD***
VFLG		
TO/FRM		***FUEL FLOW***
ANNUN		
RMI		***Set Fuel Flow?***
OBS		
DTK		

GNS530(W)/GNS430(W) – MAIN LIGHTING Page

	Display		*Key*	
LIGHTING				
SOURCE				
RESP TIME / MIN				
SLOPE / OFFSET				
PHOTO TRANS % (if applicable)				
PHOTO SLP / OFST (if applicable)				

Some of the parameter names for unit lighting are different in the IFD – the mapping is identified later in this document.

The GPS Date/Time page does not exist in the IFD and there is no need to record the page as part of this process.

GNS530(W)/GNS430(W) – MAIN DISCRETE I/O Page

GRAY CODE		***DECODED ALTITUDE***	
	EXTERNAL SWITCH STATE		
	RMT CDI ☐	***OBS*** ☐	
	DISCRETE TOGGLE		
APR ☐		***OBS*** ☐	***ILS/GPS APR*** ☐
GPS ☐		***TERM*** ☐	
INTEG ☐		***VLOC*** ☐	
MSG ☐		***WPT*** ☐	

Note: Check off the squares, as required, to match the solid squares on the GNS530/W/430/W unit – these check that discretes are wired correctly.

GNS530(W)/GNS430(W) – MAIN CDI / OBS CONFIG Page

	CDI	***NAV FLAG***	***TO-FROM***
LAT			
VERT			
SELECTED COURSE			
CDI	***OBI SOURCE***	***V-FLAG STATE***	

GNS530(W)/GNS430(W) – COM SETUP Page (GNS-530W Only)

FREQ		***SQ 250***	
SPACING		***SQ 833***	
		SIDETN	
		MIC	
		STORE CALIBRATION?	
PTT ☐	***XFR*** ☐	***RX*** ☐	***TX*** ☐

Note: The squares above do not need to be recorded – they fill in when/if that function is activated. The only parameter that matters here to record is the Spacing value.

The VOR Discrete I/O page does not exist in the IFD and there is no need to record the values as part of this procedure.

GNS530(W)/GNS430(W) – VOR/LOC/GS CDI Page

	CDI	***NAV FLAG***	***SPR FLAG***	***TO-FROM***
LAT				
VERT				
SELECTED COURSE				
DME CHANNEL MODE				

GNS530/W/430/W Only

GNS530(W)/GNS430(W) – VOR/LOC/GS ARINC 429 CONFIG Page (GNS530/W/430/WW Only)

	RX	***TX***
SPEED		
SDI		
DME MODE		

GNS530(W)/GNS430(W) – GPS Vertical Offset (if present)

GPS Antenna Height Above Ground	

GNS530(W)/GNS430(W) – Stormscope Config Page (if configured for Stormscope)

STATUS:	***MODE:***
SW VERSION:	***ANT MOUNT:***
HDG FORMAT	***HDG FLG SENSE***
☐ ***HDG FLAG***	☐ ***SYNC ANGLE***
☐ ***HDG STAB***	☐ ***SYNC REF***
☐ ***HDG VALID***	

Note: Squares should all be green if no issues.

GNS530(W)/GNS430(W) – STORMSCOPE TEST Page (if configured for Stormscope)

MODE
STATUS
TRIGGER COUNT
HDG

GNS530(W)/GNS430(W) – Traffic Config Page (if configured for Traffic)

ALT	
LIM A *(if 429 interface)*	
LIM B *(if 429 interface)*	
HDG *(if 429 interface)*	
BARO ALT ☐	*(if 429 interface)*
RAD ALT ☐	*(if 429 interface)*
TEST MODE?	*(if 429 interface)*

GNS530(W)/GNS430(W) – RYAN TCAD CONFIG Page (if configured for Ryan TCAD]

MODE	
APPROACH MODE	
HEIGHT	
RANGE	
GND/FLD ELEVATION	
VOLUME	
MUTE DURATION	
VOICE ALERT	
UNKNOWN DEVICE	☐ ***STATUS*** ☐ ***MUTE***

GNS530(W)/GNS430(W) – GAD 42 Config Page (if configured for an ARINC 429 input from GAD 42)

MAIN RMI/OBI		***ROLL STEERING***	
NAV RMI/OBI		***REMOTE CRS SEL***	
SEL CRS DRIVE		***TAS INPUT***	
DIST SERIAL		***GPS/NAV 429 L/H***	
		HEADING 429 L/H	
GAD SW VER:			
STATUS:			

GNS530(W)/GNS430(W) – GDL Config Page (if installed)

ATTENUATION	
MODEL (if displayed)	

GNS530(W)/GNS430(W) – DATALINK DIAGNOSTICS Page (if installed)

QOS	***TERR***
SAT 1	***SAT 2***
TUNER	

2.2 *GNS Removal*

2. Insert 3/32 hex wrench in the hex screw extraction hole of unit as shown below and rotate hex wrench counter clock wise (approx. 22 rotations) until you feel you've reached the stop and the unit is disengaged from the tray ~1/4".

GNS hex screw extraction hole

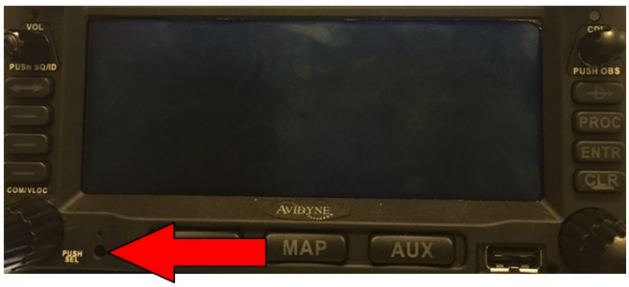
GNS Physical Removal

3. Grab the unit with both hands and pull it out of the tray as shown.
4. Look into the tray to the back for any bent/damaged pins on connectors. If any bent pins or bent connectors are present – **Stop**. The Garmin unit and/or tray connectors are damaged and will require service by an authorized repair station or repairman.

Back-plate with Connectors (radio side)

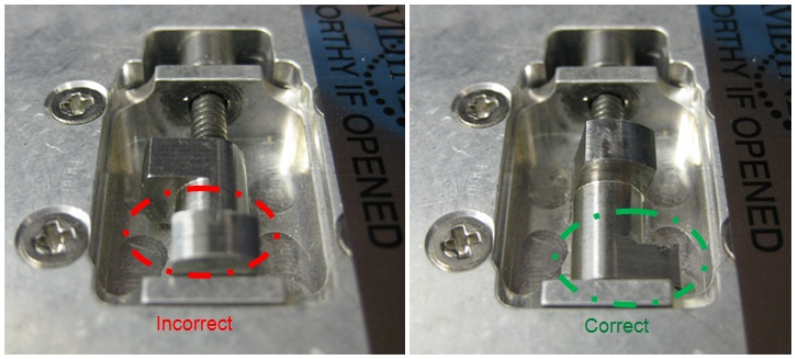
2.3 *IFD4XX/IFD5XX Insertion:*

IFD5XX hex screw hole



IFD4XX hex screw hole

5. Flip IFD unit to turn it upside down. Ensure the cam latch is flush to cavity as shown in green circle below. If the latch is not in the correct position, use the hex wrench to set it to flush.



IFD4XX/IFD5XX Extraction Pawl (bottom of radio)

6. Dual IFD Chassis ID Setting

   Note: This step is not applicable for single IFD installations

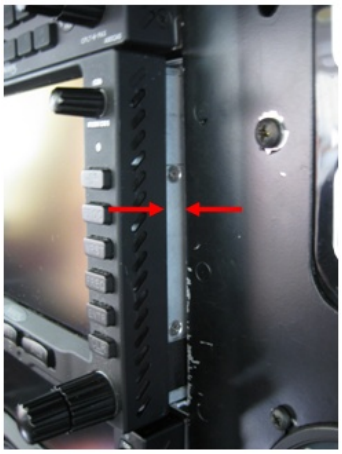
For dual IFD4XX/5XX installations, it is imperative that the proper Chassis ID settings are established for each IFD via the DIP switches located along the right side of the IFD4XX/IFD5XX outer chassis. Not doing so will result in multiple error messages and degraded performance when two IFDs are installed in an airplane.

Figure 3: IFD4XX/IFD5XX DIP Switches

Determine which IFD is to be designated as IFD #1 and which is to be designated as IFD #2 (Note, there is no operational difference, this is Databus de-confliction necessity.). Set the side chassis ID dip switches per the table below:

IFD Position Designation	DIP switch selections
IFD #1	↑ ↑ ↑ (up, up, up)
IFD #2	↓ ↑ ↑ (down, up, up)

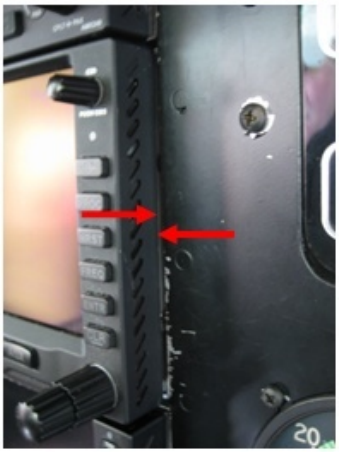
7. With the display facing you, insert unit into tray until stops then wiggle the unit around a little to ensure it is almost all the way in and is a far as can be placed without using the hex wrench. The unit should go smoothly into the tray. The unit should sit as far into the tray - with a gap as shown below.



IFD5XX Radio/Panel Gap - start

i) Insert hex wrench into the center hole and rotate hex wrench clock wise (approx. 20 rotations) unit the unit is fully seated on the tray.

Note: An improperly seated IFD will cause damage to the connectors/pins or tray. It is imperative to use maximum care when seating and securing the IFD.



IFD5XX Radio/Panel Gap - completed

2.4 *Configuring the IFD4XX/IFD5XX*

8. Provide power to the aircraft. Battery alone may not be enough.

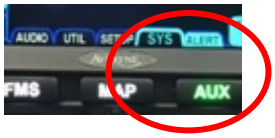
9. Access the "Config" tab on the IFD4XX/IFD5XX in Maintenance Mode. Maintenance mode can be accessed by using the following procedures (on the ground only):

   i) Power on the IFD540/440

   ii) Press **ENTR** Button to accept the on screen statement

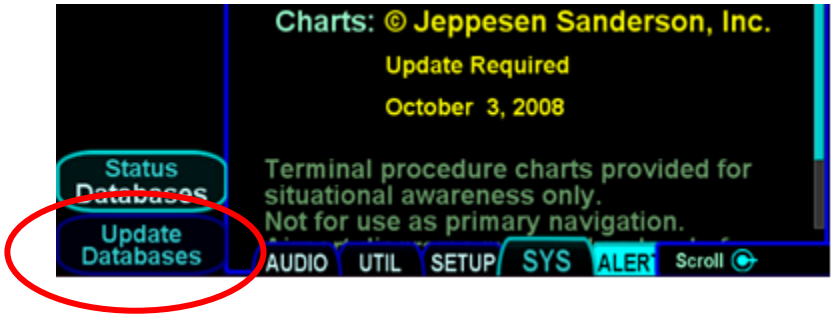
   iii) Press **Proceed** Line Select Key (LSK) followed by the **Confirm** LSK on the database acknowledgement screen (This is only shown if there are out of date databases)

   iv) Select the "**AUX**" page button to display the Auxiliary Page. Press on the right side of the "**AUX**" page button until the "**SYS**" tab is shown



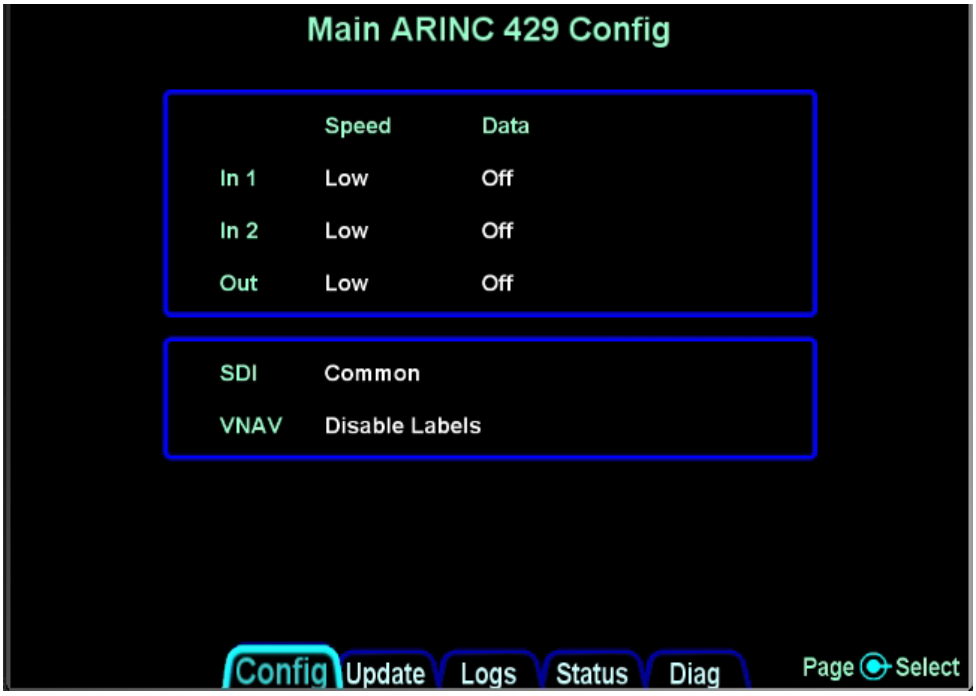
   v) Press the "Status" LSK, as required, until "Software" is the displayed item.

vi) Select "Update Databases" LSK by pressing the associated button. Press the "**Confirm**" LSK after it appears. The screen will be blank for several seconds before coming up in Maintenance Mode



10. When in Maintenance Mode on the IFD, press the right side of the AUX button until "Config" tab is the active tab.

11. Using the information entered into the tables from the GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W), enter the same settings into each of the configuration pages of the IFD4XX/IFD5XX using the filled-in GNS configuration tables in Section 2.1. Note: if the removed Garmin unit was configured for GTX330 on the Main RS232 Config page, there will be a different setting required on the Avidyne IFD. GNS has two options – "GTX330" and "GTX330 ***without*** traffic". The IFD has two options – "GTX330" and "GTX330 ***with*** traffic". So if your Garmin unit was set to "GTX330" then you need to select "GTX330 with traffic" on the Avidyne IFD.



Release 10.2 adds an ARINC429 Out 2 row – that is not applicable for this process.

Avidyne IFDs have more RS-232 ports than Garmin units – those extra rows are not applicable for this process.

The Main System Configuration page on the Avidyne IFDs have more fields – the fuel type must match that from the removed Garmin unit. The Airframe, Tail Number and External TAWS = No fields must be entered on the Avidyne IFD.

The COM spacing (25 kHz vs 8.33 kHz) entry is made on the IFD User Options page.

The Main CDI/OBS Configuration page on the IFD has two extra fields that should be entered as "No" – Ignore SEL CRS for GPS, and Ignore SEL CRS for VLOC.

The Garmin value "Hide" for the VOR/LOC/GS CDI page uses "Hidden" in the Avidyne units.

The Avidyne IFD GPS Setup page must also select the Antenna Type (WAAS or non-WAAS) – that selection should match the type of Garmin unit removed.

The Avidyne IFDs may have extra pages (e.g. Remote Transponder, WiFi Config, Bluetooth Setup, etc) that don't exist in the Garmin devices – they are not applicable for this process.

i) Twist the outer ring of the bottom right knob to select a new Config page.

ii) Push the bottom right knob to put the system into Edit mode.

iii) Twist the outer ring of the bottom right knob to highlight a field that needs editing.

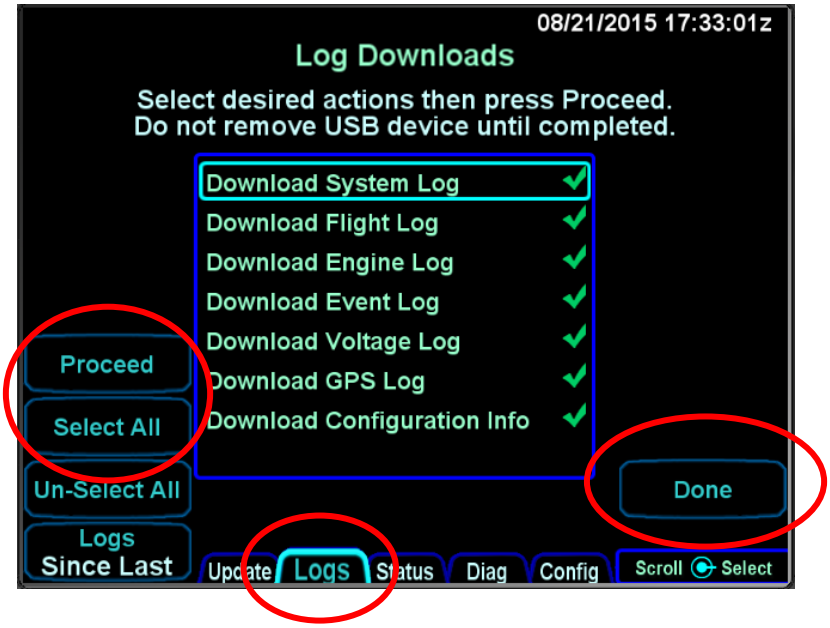
iv) Once in edit mode on the desired field, twist the inner ring of the bottom right knob to select the desired value.

v) Repeat with outer ring twist to the next field and inner ring twist to change the value.

vi) When all values on that particular page are entered, push the bottom right knob to get out of edit mode.

vii) Twist the outer ring to cycle to the next page and repeat.

viii) When all done with entering values to match the removed Garmin configuration, press the side of the AUX button as required to the “Logs” tab. Ensure a USB fob is inserted in the front bezel USB port and then press the “Select All” LSK and then the “Proceed” LSK to start the datalog download.



ix) When the datalogs are done, press the “Done” LSK and remove the USB fob

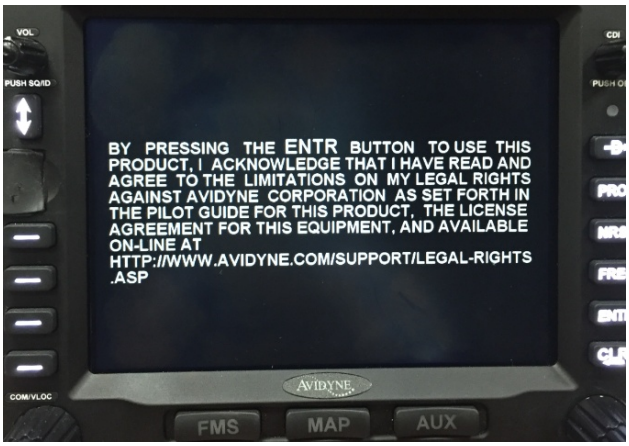
x) Email the datalog files (approximately 50) on the fob to Avidyne Tech Support (techsupport@avidyne.com) and include your tail number in the Email subject line.

3. Functional Checks and System verification - Ground

After configuring the IFD4XX/IFD5XX, the following post-installation tasks should be performed.

3.1 *IFD Self-Test Outputs Check*

While the notification of legal rights page is displayed during normal power up on the ground, all remote annunciators lamps are lit up and the system generates a specific set of electrical outputs for the purpose of self-test and troubleshooting.



Before pressing “ENTR”, verify the selected Primary Navigation Display (HSI, CDI, EFIS…) indications are displayed per the table below.

Parameter	Self-test Value
Course Deviation	Half-scale left deviation, TO indication, flag stowed
Glideslope/Vertical Deviation	Half-scale up deviation, flag stowed
Annunciators	All on
Bearing to Waypoint (RMI)	135°
Selected Course (OBS)	150° when interfaced to an HSI with course pointer
Desired Track	150°
Distance To Go	10.0 NM
Time To Go	4 minutes
Active Waypoint	“AVDYN”
Groundspeed	150 knots
Present Position	N39°04.05’, W094°53.86’
Waypoint Alert	Active
Phase of Flight	Enroute

Parameter	Self-test Value
Message Alert	Active
GPS Integrity	Invalid
Roll Steering (if applicable)	Flight Director commands 0° bank (level flight) for 5 seconds; commands increasing right bank at 1°/second for 5 seconds; commands 5° right bank for 5 seconds; commands decreasing right bank at 1°/second for 5 seconds, until command is 0° bank again. This cycle repeats continuously.

IFD4XX/IFD5XX Self-test Output

3.2 *Database Check*

12. Determine if the Navigation, Chart, and Obstacle databases are up-to-date Current databases are required for IFR flight.

    i) Press the left/right side of the AUX page function key until “SYS” tab is active;

    ii) Press the “Status” LSK until “Database” is displayed;

    iii) Note the database validity dates on the page

13. If the databases need to be updated, reference the IFD Pilot’s Guide for update procedures.

3.3 *GPS Signal Acquisition*

14. After installation, position the aircraft outside with clear unobstructed view of the sky. Avoid performing these checks using a GPS repeater within a building / hangar.

15. Verify the IFD4XX/IFD5XX acquires and calculates a GPS position by accessing the GPS Status page (AUX page, SYS tab, press the “Status” LSK until “GPS” is displayed). If WAAS enabled, ensure the system reaches SBAS status (approximately 3 minutes). If not WAAS enabled, ensure the system reaches FDE status (approximately 1.5 minutes).

3.4 *VHF COM Checkout (N/A for IFD410, 510)*

16. Tune a local frequency (e.g. ATIS, CTAF, etc) and verify voice communication is received and clear.

17. On an appropriate local frequency (e.g. Ground, CTAF, etc), perform a voice transmit test and verify your transmitted voice was received loud and clear.

3.5 *VOR/NAV Checkout (N/A for IFD410, 510)*

18. Use VOT or local VOR to verify Nav receiver function and listen to Nav ID for function and objectionable noise. If using a VOT, ensure the system passes per standard pass/fail criteria.

19. Prior to any IFR flight, conduct the VOR test as defined by CFR 14 Part 91.171.

3.6 *IFD540/440 Bezel and Display Lighting*

20. Verify the Bezel and Display Lighting for the IFD4XX/IFD5XX is set to an appropriate level for expected flight conditions. See IFD4XX/IFD5XX Pilots Guide for details on adjusting lighting if required.

4. Functional Checks and System verification - Flight

Avidyne recommends a nominal VFR flight check be performed in addition to the ground checks that were just performed to verify “normal” flight operations are all functional. Verify the avionics, including the autopilot, if coupled to the IFD, are operating similarly to pre-exchange operations.

5. Paperwork and Exchange Sign-Off

5.1 *Update Approved Flight Manual Supplement (AFMS)*

The AFMS included with the IFD4XX/IFD5XX has blanks to record aircraft information – registration number and serial number. Record your aircraft information and replace the original Garmin AFMS that is included in the aircraft's Aircraft Flight Manual (AFM)/Pilot's Operating Handbook (POH).

Insert the appropriate aircraft information in the blanks provided on the cover of the **Avidyne 600-00298-000 700-00182-() IFD540 Flight Manual Supplement**. Insert this document in the aircraft's AFM/POH.

5.2 *Update Instructions for Continued Airworthiness (ICA)*

The instructions for continued airworthiness included with the IFD4XX/IFD5XX have blanks to record aircraft information – registration number and serial number. Record your aircraft information and replace the original Garmin GNS ICA that is included in the aircraft's maintenance records.

Insert the appropriate aircraft information in the blanks provided on the cover of the **Avidyne AVIFD-315 700-00182-XXX IFD5XX Instructions for Continued Airworthiness.** Insert this document in the aircraft's maintenance records.

5.3 *Weight and Balance*

For those installations where an IFD4XX/IFD5XX is replacing a GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W), since the IFD4XX/IFD5XX is within 5% of the weight of the removed GPS 400(W)/GNS 430(W)/GPS 500(W)/GNS 530(W) (less than 1 pound difference), a new weight and balance entry is not required according to AC 43.13-1B Change 1, Acceptable Methods, Techniques, and Practices Aircraft Inspection and Repair (Chapter 10) and AC 120-27E Aircraft Weight and Balance Control.

5.4 *Placards*

Any placard that specifies the kind of operations to which the operation of the airplane is limited or from which it is prohibited under 14 CFR 23.1525 must be retained.

5.5 *Log Entry*

The pilot who performed the Nav/Com/GPS navigator exchange must log that activity in the airplane's maintenance records (Airframe logbook).

The entry must include information indicating the removal of the GNS unit, insertion and configuration of the Avidyne IFD unit, replacement of ICA and AFMS, negligible weight and balance change, dated, signed with pilot certificate number. Either use the sticker provided with the IFD or write the entry in manually. A sample is included below:

The following preventive maintenance has been performed to this aircraft in accordance with 14CFR 43.3, Part 43 Appendix A and Avidyne IFD4XX & IFD5XX Series NAV/COM/GPS Navigator Exchange Guide, p/n 600-00316-000.

Removed previously installed Garmin GNS4XX(W) (and/or GNS5XX(W)) and installed Avidyne IFD4XX (and/or IFD5XX) into existing Garmin radio tray(s) and performed functional checks per Sec. 3 and 4 of Avidyne IFD4XX & IFD5XX Series NAV/COM/GPS Navigator Exchange Guide, p/n 600-00316-000.

Replaced Garmin GNS AFMS with Avidyne AFMS p/n 600-00298-000 rev 0X. Removed Garmin GNS Instructions for Continued Airworthiness from the aircraft records and attached Avidyne ICA p/n AVIFD-315, Rev 0X.

Weight and Balance change is negligible.

This aircraft is approved for return to service.
Jan 01, 20XX John Q. Pilot Cert. #

5.6 *Equipment List*

If there is an Equipment List or Minimum Equipment List (MEL) as part of the aircraft in question, Avidyne recommends updating the Equipment List or Minimum Equipment List.

Appendix A Regulatory Basis

This section contains snippets of the relevant portions of 14 CFR Part 43 that serve as the regulatory basis for this exchange process.

14CFR Part 43 describes aircraft maintenance, preventive maintenance, rebuilding and alteration.

Sec. 43.3

Persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations.

(g) Except for holders of a sport pilot certificate, the holder of a pilot certificate issued under part 61 may perform preventive maintenance on any aircraft owned or operated by that pilot which is not used under part 121, 129, or 135 of this chapter. The holder of a sport pilot certificate may perform preventive maintenance on an aircraft owned or operated by that pilot and issued a special airworthiness certificate in the light-sport category.

(5) The items of preventive maintenance authorized by this section are those listed in paragraph (c) of appendix A of this part.

Major alterations, Major Repairs and Preventive maintenance are described in 14CFR Part 43 Appendix A.

(c) *Preventive maintenance.* Preventive maintenance is limited to the following work, provided it does not involve complex assembly operations:

(31) Removing and replacing self-contained, front instrument panel-mounted navigation and communication devices that employ tray-mounted connectors that connect the unit when the unit is installed into the instrument panel, (excluding automatic flight control systems, transponders, and microwave frequency distance measuring equipment (DME)). The approved unit must be designed to be readily and repeatedly removed and replaced, and pertinent instructions must be provided. Prior to the unit's intended use, an operational check must be performed in accordance with the applicable sections of part 91 of this chapter.

Appendix B Approved Interfaces

The IFD4XX/IFD5XXcan interface with a host of other avionics equipment that are approved to function with the GNS4XX(W)/GNS5XX(W). Review the logbook entry in the airframe logbook that describes the installation of the GNS4XX(W)/GNS5XX(W). Ensure that the unit was installed and approved using Garmin data and that no specific equipment was interfaced that is not included in the list below. Any interface equipment that is not listed in the table below must be installed by an Avidyne dealer using approved data.

Category	Vendor	Model
Air Data	B&D	2600 ADC
	B&D	2601 ADC
	B&D	2800 ADC
	B&D	900004-003 ADC
	Bendix King	KAD 280/480 ADC (KDC 281, 481)
	Shadin	8800T Alt Computer
	Shadin	9000T Alt Computer
	Shadin	9200T Alt Computer
	Shadin	9628XX-X Fuel/Air Data Computer
	Insight	TAS 1000 ADC
	Icarus	Instrument 3000
	Sandia	SAC7-35
	Garmin	GDC74A
Audio Panel	Avidyne	AMX240
	Apollo (Garmin)	SL10
	Apollo (Garmin)	SL15
	Garmin	GMA 340
	Garmin	GMA 347
	PS Engineering	6000
	PS Engineering	7000
	PS Engineering	8000/8000BT
	Bendix King	KMA 24
	Bendix King	KMA 26
	Bendix King	KMA 28
	Bendix King	KMA 24H
Autopilot	Bendix King	KFC400
	Bendix King	KCP320

Category	Vendor	Model
	Bendix King	KFC325
	Bendix King	KFC300
	Bendix King	KFC225
	Bendix King	KFC200
	Bendix King	KFC250
	Bendix King	KFC275
	Bendix King	KFC150
	Bendix King	KAP150
	Bendix King	KAP140
	Bendix King	KAP100
	Century	I
	Century	II
	Century	III
	Century	IV
	Century	21
	Century	31/41
	Century	2000
	Century	Triden
	Century	AK 1081 GPSS Converter
	Collins	APC-65 Series
	Collins	FGC-65
	Collins	FYD-65
	STec	20
	STec	30
	STec	40
	STec	50
	STec	55
	STec	55X
	STec	60 PSS
	STec	60-1
	STec	60-2
	STec	65
	STec	ST901 GPSS Converter
ADS-B	Avidyne	AXP340
	Avidyne	AXP322

Category	Vendor	Model
	Avidyne	SkyTrax100
	Garmin	GTX330
	Garmin	GTX335
	Garmin	GTX345
Datalink	Garmin	GDL-69/69A
	Avidyne	MLB700
	WSI	AV-300/350
Displays	Garmin	GDU 620 (G500/600)
	Garmin	MX20
	Garmin	GMX200
	Garmin	GPSMAP 195
	Garmin	GPSMAP 295
	Garmin	GPS III Pilot
	Garmin	GPSMAP 196
	Garmin	GPSMAP 296
	Garmin	GPSMAP 396
	Garmin	GPSMAP 496
	Garmin	GPSMAP 695
	Garmin	GPSMAP 696
	Garmin	Aera 796/795
	Argus	3000
	Argus	5000
	Argus	7000
	Horizon	DDMP
	Avidyne	EX500
	Avidyne	EX600
	Avidyne	EX5000
	Avidyne	FlightMax Series
DME	Bendix King	KN 61
	Bendix King	KN 62/62A
	Bendix King	KN 63
	Bendix King	KN 64
	Bendix King	KN65
	Bendix King	KDI 572
	Bendix King	KDI 574

Category	Vendor	Model
	Bendix King	KDM706
	Collins	DME 40
	Collins	DME 42
	Collins	TCR 451
	Narco	DME 890
	Narco	IDME 891
	ARC (Cessna)	RTA-476A
EFIS	Bendix King	EFS 40/50
	Avidyne	EXP5000
	Aspen	Pilot PFD (EFD1000)
	Collins	Proline 21
	Collins	EFIS 84
	Honeywell	Primus 1000
	Sextant	SMD 45
EGPWS	Bendix King	KGP560
EHSI	Sandel	SN3308
	Sandel	SN3500
Encoding Altimeter or Blind Encoders	Bendix King	KEA-130A
	Bendix King	KEA-346
	Terra	AT-3000
	Sandia	SAE5-35
	Trans-Cal Industries	IA-RS232-X
	Trans-Cal Industries	SSD120
	ACK Technologies	A-30
External GPS Annunciator	Mid Continent	MD41-14XX
	Staco Switch	992561
	Vivisun	95-40-( )
	Vivisun	95-45-( )
Fuel	Shadin	91053XP and 91053XT-D “Digiflo-L” Digital Fuel Mgmt Systems
	Shadin	91204XT(38)D and 91204XT-D “Miniflo-L” Digital Fuel Mgmt Systems
	Shadin	91802-() “DigiData” Fuel/Airdata

Category	Vendor	Model
	JPI	EDM-700 Engine Monitor
	JPI	EDM-760 Engine Monitor
	JPI	FS-450
	ARNAV	FC-10
	ARNAV	FT-10
	EI	FP-5L
	Insight	GEM 3
Heading	Bendix King	KAH 460 Inertial System (KAU 461 also)
	Collins	AHC 85 Inertial System Laseref
	Honeywell	HG 1075AB, HG 1095AG Inertial Systems
	Litef	LTR 81 Inertial System
	Litton	LTN 90-100 Inertial System
	Litton	LTN 91 Inertial System
	Litton	LTN 92 Inertial System
Lightning	L3	WX500
	Avidyne	TWX670 ("Native" format)
Miscellaneous	Garmin	GAD42 Interface Adapter
Nav Indicator	Garmin	GI 102/A
	Garmin	GI 106/A
	Bendix King	KI 202
	Bendix King	KI 203
	Bendix King	KI 204
	Bendix King	KI 206
	Bendix King	KI 208
	Bendix King	KI 208A
	Bendix King	KI 209
	Bendix King	KI 209A
	Bendix King	KI 525A
	Bendix King	KPI 552/B
	Bendix King	KPI 553/A/B
	Century	NSD 360A
	Century	NSD 1000
	Collins	331A-6P

Category	Vendor	Model
	Collins	331A-9G
	Collins	PN-101
	Mid Continent	MD 222-402/-406
	Mid Continent	MD 200-20X/-30X
	STec	ST 180
	Sperry	RD444
	Sperry	RD 550A
	Sperry	RD 650
RMI	Bendix King	KI 229
	Bendix King	KNI 582
	Bendix King	KDA 692
Remote TAWS Annunciator	Garmin	013-0079-XX
	Mid Continent	MD41-10XX
Traffic	L3	SKY497 SkyWatch
	L3	SKY899 SkyWatchHP
	Bendix King	KTA-870
	Bendix King	KTA-970
	Bendix King	KMH980
	Bendix King	KMH880
	Garmin	GTS800/820/850
	Ryan	TCAD 9900B
	Ryan	TCAD 9900BX
	Avidyne	TAS-6XX series
Transponder	Garmin	GTX330 (transponder functionality only)
	Garmin	GTX330 ES (transponder functionality only)
	Garmin	GTX 330D ES (transponder functionality only)
	Garmin	GTX 327
	Trig	TT31
	Avidyne	AXP340/322
406 ELT	Artex	ME406
	Ameri-King	AD 451-(*)
	Ack	E-04
	Narco	Not specified

Category	Vendor	Model
	Pointer	3000
	Kannad	Not specified

Table 3: IFD4XX/IFD5XX Compatible Equipment